

AMENDMENT TO THE CLAIMS

1-63. (Cancelled)

64. (New) A drug mixing system comprising:
at least one receptacle port adaptor adapted to be inserted into a port of a fluid receptacle;
at least one vial adaptor adapted for connection to a vial containing a drug; and
at least one syringe adaptor adapted to be attached to a syringe and to at least one of said at least one receptacle port adaptor and said at least one vial adaptor,
said system being characterized in that at least one of said at least one receptacle port adaptor, said at least one syringe adaptor and said at least one vial adaptor being vented to the atmosphere in a manner which prevents release to the atmosphere of possibly harmful contents of said vial.

65. (New) A drug mixing system according to claim 64 and wherein said possibly harmful contents of said vial are in a liquid or solid form.

66. (New) A drug mixing system according to claim 64 and wherein said possibly harmful contents of said vial are in a liquid, solid or gaseous form.

67. (New) A drug mixing system according to claim 64 and also comprising a membrane vent operative to vent at least one of said at least one receptacle port adaptor, said at least one syringe adaptor and said at least one vial adaptor to the atmosphere.

68. (New) A drug mixing system according to claim 67 and wherein said membrane vent includes an adsorbent.

69. (New) A drug mixing system according to claim 68 and wherein said adsorbent is a carbon cloth.

70. (New) A drug mixing system according to claim 67 and wherein said membrane vent comprises a hydrophobic membrane.

71. (New) A drug mixing system according to claim 64 and wherein said receptacle port adaptor, said syringe adaptor and said vial adaptor are integrally formed.

72. (New) A drug mixing system according to claim 64 and wherein said at least one vial adaptor also comprises a protective vial housing operative to prevent the spread of possibly harmful contents of said vial in the event of breakage of said vial.

73. (New) A drug mixing system according to claim 64 and wherein said fluid receptacle includes a spike port and said at least one receptacle port adaptor includes a spike port adaptor.

74. (New) A drug mixing system according to claim 64 and wherein said fluid receptacle includes a needle port and said at least one receptacle port adaptor includes a needle port adaptor.

75. (New) A drug mixing system according to claim 74 and wherein said needle port adaptor includes a locking mechanism, operative to lock said needle port adaptor to said needle port.

76. (New) A drug mixing system according to claim 74 and wherein said needle port adaptor includes a needle, said needle being protected by a needle protector.

77. (New) A drug mixing system according to claim 76, wherein said needle is movable between a protected resting position and an active piercing position upon connection of said needle port adaptor to said needle port.

78. (New) A drug mixing system according to claim 76 and wherein said needle protector comprises a latex needle cover.

79. (New) A drug mixing system according to claim 64 and also comprising a vial head adaptor adapted for connection between said vial adaptor and said vial.

80. (New) A drug mixing system according to claim 64 and wherein said at least one receptacle port adaptor and said fluid receptacle are adapted to be connected to an intravenous cannula on a patient via an intravenous infusion set.

81. (New) A drug mixing system according to claim 64 and wherein said at least one syringe adaptor and said syringe are adapted to be connected to an intravenous cannula on a patient via an intravenous infusion set using an infusion set adaptor.

82. (New) A drug mixing system according to claim 64 and wherein said at least one syringe adaptor is covered by a syringe adaptor cover element.

83. (New) A drug mixing system comprising:
at least one receptacle port adaptor adapted to be inserted into a port of a fluid receptacle;
at least one vial adaptor adapted for connection to a vial containing a drug; and
at least one syringe adaptor adapted to be attached to a syringe and to at least one of said at least one receptacle port adaptor and said at least one vial adaptor;
and
said system being characterized in that said at least one syringe adaptor is adapted to be brought into fluid communication and mechanically locked to at least one of said at least one receptacle port adaptor and said at least one vial adaptor in a single step.

84. (New) A drug mixing system according to claim 83 and wherein said receptacle port adaptor, said syringe adaptor and said vial adaptor are integrally formed.

85. (New) A drug mixing system according to claim 83 and wherein said at least one vial adaptor also comprises a protective vial housing operative to prevent the spread of possibly harmful contents of said vial in the event of breakage of said vial.

86. (New) A drug mixing system according to claim 83 and wherein said fluid receptacle includes a spike port and said at least one receptacle port adaptor includes a spike port adaptor.

87. (New) A drug mixing system according to claim 83 and wherein said fluid receptacle includes a needle port and said at least one receptacle port adaptor includes a needle port adaptor.

88. (New) A drug mixing system according to claim 87 and wherein said needle port adaptor includes a locking mechanism, operative to lock said needle port adaptor to said needle port.

89. (New) A drug mixing system according to claim 87 and wherein said needle port adaptor includes a needle, said needle being protected by a needle protector.

90. (New) A drug mixing system according to claim 89, wherein said needle is movable between a protected resting position and an active piercing position upon connection of said needle port adaptor to said needle port.

91. (New) A drug mixing system according to claim 89 and wherein said needle protector comprises a latex needle cover.

92. (New) A drug mixing system according to claim 83 and also comprising a vial head adaptor adapted for connection between said vial adaptor and said vial.

93. (New) A drug mixing system according to claim 83 and wherein said at least one receptacle port adaptor and said fluid receptacle are adapted to be connected to an intravenous cannula on a patient via an intravenous infusion set.

94. (New) A drug mixing system according to claim 83 and wherein said at least one syringe adaptor and said syringe are adapted to be connected to an intravenous cannula on a patient via an intravenous infusion set using an infusion set adaptor.

95. (New) A drug mixing system according to claim 83 and wherein said at least one syringe adaptor is covered by a syringe adaptor cover element.

96. (New) A drug handling system comprising:
at least one drug handling element including atmospheric venting functionality, characterized in that said atmospheric venting functionality prevents release to the atmosphere, via said venting functionality, of potentially harmful drug material in a solid, liquid, gaseous or aerosol form.

97. (New) A drug handling system according to claim 96 wherein said atmospheric venting functionality also prevents particles and microorganisms from entering said drug handling system.

98. (New) A drug handling system according to claim 96 wherein said atmospheric venting functionality comprises at least one microporous membrane and at least one adsorbent layer.

99. (New) A drug handling system according to claim 98 wherein said membrane is a hydrophobic membrane and said adsorbent layer is a carbon cloth.

100. (New) A drug mixing method comprising:
attaching a luer fitted hypodermic syringe having a plunger to a syringe adaptor;
inserting a receptacle port adaptor into a port in a receptacle containing a fluid;
attaching said syringe adaptor, having said syringe attached thereto, to said receptacle port adaptor;

retracting said plunger, thereby at least partially filling said syringe with fluid drawn from said receptacle in a manner which ensures that the fluid remains sterile and that a user is not exposed to the fluid;

connecting said syringe adaptor having said syringe attached thereto, to a vial adaptor, having a drug containing vial attached thereto;

pushing said plunger, thus injecting said fluid contained in said syringe into said drug containing vial, thereby producing a drug solution in said vial;

drawing some of said drug solution into said syringe;

connecting said syringe adaptor having said drug-filled syringe attached thereto to said receptacle port adaptor; and

injecting said drug solution into said receptacle,

wherein at least one of said receptacle port adaptor, said syringe adaptor and said vial adaptor is vented to the atmosphere in a manner which prevents release to the atmosphere of possibly harmful contents of said vial in a liquid, solid or gaseous form.

101. (New) A drug mixing method according to claim 100 and wherein said connecting said syringe adaptor having said syringe attached thereto, to a vial adaptor comprises:

connecting said drug containing vial to a vial head adaptor; and

connecting said drug containing vial having said vial head adaptor attached thereto to said vial adaptor, prior to said connecting said syringe to said vial adaptor.

102. (New) A drug mixing method according to claim 100 and wherein said receptacle port adaptor comprises at least one of a spike port adaptor and a needle port adaptor.

103. (New) A drug mixing method comprising:

attaching a luer fitted hypodermic syringe having a plunger to a syringe adaptor;

inserting a receptacle port adaptor into a port in a receptacle containing a fluid;

attaching said syringe adaptor, having said syringe attached thereto, to said receptacle port adaptor;

retracting said plunger, thereby at least partially filling said syringe with fluid drawn from said receptacle in a manner which ensures that the fluid remains sterile and that a user is not exposed to the fluid;

connecting said syringe adaptor having said syringe attached thereto, to a vial adaptor, having a drug containing vial attached thereto;

pushing said plunger, thus injecting said fluid contained in said syringe into said drug containing vial, thereby producing a drug solution in said vial; and

retracting said plunger, thus drawing at least part of the contents of said vial into said syringe,

wherein said syringe adaptor is adapted to be brought into fluid communication and mechanically locked to at least one of said receptacle port adaptor and said vial adaptor in a single step.

104. (New) A drug mixing method according to claim 103 and wherein said connecting said syringe adaptor having said syringe attached thereto, to a vial adaptor comprises:

connecting said drug containing vial to a vial head adaptor; and

connecting said drug containing vial having said vial head adaptor attached thereto to said vial adaptor, prior to said connecting said syringe to said vial adaptor.

105. (New) A drug mixing method according to claim 103 and wherein said receptacle port adaptor comprises at least one of a spike port adaptor and a needle port adaptor.

106. (New) A drug mixing method comprising:

attaching a luer fitted hypodermic syringe having a plunger to a syringe adaptor;

inserting a receptacle port adaptor into a port in a receptacle containing a fluid;

connecting said syringe adaptor having said syringe attached thereto, to a vial adaptor, having a drug containing vial attached thereto;

retracting said plunger, thus drawing at least part of the contents of said vial into said syringe;

connecting said syringe adaptor having said syringe attached thereto, to said receptacle port adaptor; and

pushing said plunger, thus injecting said at least part of the contents of said vial into said receptacle,

wherein at least one of said receptacle port adaptor, said syringe adaptor and said vial adaptor is vented to the atmosphere in a manner which prevents release to the atmosphere of possibly harmful contents of said vial in a liquid, solid or gaseous form.

107. (New) A drug mixing method according to claim 106 and wherein said connecting said syringe adaptor having said syringe attached thereto, to a vial adaptor comprises:

connecting said drug containing vial to a vial head adaptor; and

connecting said drug containing vial having said vial head adaptor attached thereto to said vial adaptor, prior to said connecting said syringe to said vial adaptor.

108. (New) A drug mixing method according to claim 106 and wherein said receptacle port adaptor comprises at least one of a spike port adaptor and a needle port adaptor.

109. (New) A drug mixing method comprising:

attaching a luer fitted hypodermic syringe having a plunger to a syringe adaptor;

connecting said syringe adaptor having said syringe attached thereto, to a vial adaptor, having a drug containing vial attached thereto;

retracting said plunger, thus drawing at least part of the contents of said vial into said syringe;

disconnecting said syringe adaptor having said syringe connected thereto;

reconnecting said syringe adaptor having said syringe connected thereto to an infusion set adaptor; and

pushing said plunger, thus injecting said at least part of the contents of said vial into an infusion line,

wherein at least one of said syringe adaptor and said vial adaptor is vented to the atmosphere in a manner which prevents release to the atmosphere of possibly harmful contents of said vial in a liquid, solid or gaseous form.

110. (New) A drug mixing method according to claim 109 and wherein said connecting said syringe adaptor having said syringe attached thereto, to a vial adaptor comprises:

connecting said drug containing vial to a vial head adaptor; and

connecting said drug containing vial having said vial head adaptor attached thereto to said vial adaptor, prior to said connecting said syringe to said vial adaptor.

111. (New) A vial adaptor adapted for connection to a vial containing a drug and adapted for connection to other elements of a drug mixing system, said vial adaptor comprising:

a spike adapted for penetrating said vial;

a mechanical lock for locking said vial adaptor to said vial once said spike penetrates said vial; and

an element operative to vent the interior of said vial to the atmosphere without permitting potentially harmful contents of said vial to reach the atmosphere.

112. (New) A vial adaptor according to claim 111 and also comprising a membrane vent operative to vent said vial adaptor to the atmosphere.

113. (New) A vial adaptor according to claim 112 and wherein said membrane vent includes at least one of an adsorbent and a hydrophobic membrane.

114. (New) A vial adaptor according to claim 113 and wherein said adsorbent is a carbon cloth.

115. (New) A vial adaptor according to claim 113 and wherein said hydrophobic membrane vent is proximal to the interior of said vial and said adsorbent is distal to the interior of said vial.

116. (New) A vial adaptor according to claim 111 and also comprising a septum equipped syringe port.

117. (New) A vial adaptor according to claim 111 and wherein said mechanical lock includes at least one radially extending portion and at least one transversely extending portion.

118. (New) A vial adaptor adapted for connection to a vial containing a drug and being adapted for connection to other elements of a drug mixing system, said vial adaptor comprising at least one locking element, operative to irreversibly lock said vial adaptor to said vial.

119. (New) A vial adaptor according to claim 118 and wherein said at least one locking element includes at least one radially extending portion and at least one transversely extending portion.

120. (New) A syringe adaptor adapted for connection to a syringe and adapted for connection to at least one other element of a drug mixing system, said syringe adaptor comprising:

a septa housing;

at least one septum enclosed in said septa housing; and

a needle, including a tip located in said septa housing when said syringe adaptor is not connected to said at least one other element.

121. (New) A syringe adaptor according to claim 120 wherein:
said at least one septum includes at least two septa defining a space therebetween; and
said tip is located in said space when said syringe adaptor is not connected to said at least one other element.

122. (New) A syringe adaptor according to claim 120 and wherein said septa housing is movable relative to said needle, thereby to expose said tip.

123. (New) A syringe adaptor according to claim 120 and also comprising a spring associated with said septa housing and wherein said septa housing is biased by said spring to a protective position in which said needle tip is protected.

124. (New) A syringe adaptor according to claim 120 and wherein at least a portion of said needle is protected by a needle protector.

125. (New) A syringe adaptor according to claim 124 and wherein said needle protector comprises an elastomeric tubing element.

126. (New) A receptacle port adaptor connectable to a fluid receptacle and to the syringe adaptor of claim 120.

127. (New) A vial head adaptor for use in connecting a vial with a first head circumference to a vial adaptor adapted for use with a vial with a second head circumference, said second head circumference being greater than said first head circumference, said vial head adaptor comprising at least one locking element.

128. (New) A vial head adaptor according to claim 127 and wherein said at least one locking element includes multiple locking elements arranged generally circumferentially.

129. (New) A vial head adaptor according to claim 128 wherein said at least one locking element includes a locking tooth.

130. (New) A protective vial housing for use with a drug mixing system comprising a fluid flow passageway adapted to connect a vial containing a drug to said drug mixing system, said protective vial housing being operative to prevent release to the atmosphere of possibly harmful contents of said vial in a liquid or solid form in the event of breakage of said vial.